Federal Democratic Republic of Ethiopia

EDICT OF GOVERNMENT

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ET 668 (2001) (English):
CEREALS-TERMINOLOGY

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Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Cereals, pulses and derived products (TC 11) and published by the Ethiopian Standards Agency (ESA).

The standard is a reaffirmation for reprint of the Ethiopian Standard ES :2001, s - , with some editorial changes without altering the technical contents
in the former text.

Cereals — Terminology

1 Scope

This Ethiopian Standard defines the terms related to cereal grains.

2 General term

2.1
cereals
are grains of plants usually cultivated, belonging to the gramineal family.

3 Definitions

3.1
blemished grains
grains which are insect or vermin damaged, stained, diseased, discolored, germinated, frost damaged or otherwise materially damaged

3.2
insect or vermin damaged grains
those kernels with obvious weevil – bored holes or which have evidence of boring or tunnelling, indicating the presence of insects, insect webbing or insect refuse, or degermed grains, chewed in one or more than one part of the kernel which exhibit evident traces of an attack by vermin

3.3
stained kernels
are those whose natural colour has been altered by external factors. This includes frost or weather damaged kernels which may have dark stains or discoloration with a rough external appearance

3.4
diseased grains
are rotting kernels which can usually be detected without opening the kernel for examination

3.5
discoloured kernels
include those materially discoloured by excessive heat, including that caused by excessive respiration (heat damaged) and dried damaged kernels. Kernels may appear darkened, wrinkled, blistered, puffed or swollen often with discoloured damaged germs. The seed coat may be peeling or may have peeled off completely, giving kernels a checked appearance

3.6
sprouted kernels
are those kernels showing visible signs of sprouting, such as cracked seed coats through which a sprout has emerged or is just beginning to emerge

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3.7
frost damaged kernels
kernels which appear bleached or blistered and the seed coat may be peeling. Germs may appear dead or discolored

3.8
sprouted grains
are those kernels hsowing visible signs of sprouting, such as cracked seed coats through which a sprout has

grains or pieces of grains that are not fully developed

3.9
filth
are impurities of animal origin (including dead insects)

4 General terminology

4.1
cereals
grains of plants, usually cultivated, belonging to the Gramineae family

4.1.1
bread-making cereals
cereals that are suitable for bread making

Examples wheat, rye, triticale.

4.1.2
spring cereals
varieties (cultivars) of cereals which are planted in the spring and which flower in one season

4.1.3
winter cereals
varieties (cultivars) of cereals which are planted in autumn and which flower in the next season

NOTE - Flowing occurs only if plants are subjected to certain natural and artificial conditions of vernalization usually involving cold treatment, which occurs naturally if plated before winter frost.

4.1.4
bread wheat
bread-making wheat
common wheat which has the appropriate physical, chemical, technological and other properties for a bread product (such as leavened bread)

4.1.5
feed wheat
wheat whose grains are used for feeding animals

4.1.6
blending wheats
wheats with special characteristics and which are added in small quantities to other wheat in order to produce flour which is better suited for its intended purpose

4.1.7
food barley
barley whose grains are used for feeding animals

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4.1.8
malting barley
barely having certain characteristics (physical, chemical, germinative and others) which enable it to be changed in to malt

4.1.9
feed barley
barley whose grains are used for feeding animal

4.1.10
seed grain
grain intended for sowing

4.2
variet
cultivar
unique and uniform member of a species of plant (except for hybrid species) that retains its characteristics from generation to generation through its natural mode of reproduction

4.3
grading
operation consisting of identifying and separating batches of cereals according to their appearance and physical condition or according to one of the special (chemical, technological) characteristics

4.3.1
small wheat
losses on cleaning, composed mainly of small-sized and broken grains

4.3.2
screenings
losses on cleaning, composed mainly of small-sized and broken grains

4.3.3
viteous grains
whole sound grains having the natural translucent appearance

NOTE - These are not considered to be impurities.

4.3.4
non-wholly-vitreous grains
partly vitreous grains
grains of wheat which are partially vitreous

4.3.5
sick wheat
grains which show, at places other than on the germ itself, colorations between brown and brownish-black

NOTE - sick wheat is not considered to be an impurity except for Durum wheat.

4.3.6
heat-damaged grains
grains whose external appearance has been changed or which have undergone modification of functional properties due to spontaneous heating or drying at and excessively high temperature

4.3.7
smutty grains
grains coloured on the outside by the presence of spores of smuts (Ustilageo spp.) or brown-black spores of bunt (Tilletia spp.; see bunted grains)

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NOTES
1. A characteristic fishy odour is associated with common and stinking hunts (Tilletia foetida or Telletia caries).
2. Smutty grains should not be confused with grains simply with earth or
3. Spores are often the hairs of the brush of wheat.

4.3.8
bunted grains
fungal structures which approximate the shape of normal grain, filled with fetid-smelling spores on the bunts Tilletia caries, Tilletia controvda, Tilletia foetida, Tilletia intermedia, Tilletia triticoides, neo vossia indicate

4.3.9
ear cockle
nematode seed gall having a blackish brown soloration and containing a mass of small dried-up nematode worms of the species Anguina triticl, which become active when immersed in water

NOTE - This term does not apply to batches of grain containing seeds of corn or Purple Cockle (Lychnis güthago Scop or Agrostemma güthago L.).

4.3.10
fracture
surface presented by the endosperm of a broken grain, which may be either mealy, semi-vitreous or vitreous in appearance

4.3.10.1
mealy fracture
fracture surface of endosperm that is completely loose in texture and starchy in appearance

4.3.10.2
semi-vitreous fracture
fracture surface of endosperm that is partly mealy and partly vitreous in appearance

4.3.10.3
vitreous fracture
fracture suface of endosperm that is completely compact and traslucent in appearance

4.1 Terminology relating to physiology

4.1.1
grain brightness
lustrous external appearance of grain which has not been discoloured or damaged by adverse weather conditions, by pests or by unsuitable conditions of storage

4.1.2
maturity
state of a grain when physiologically fully developed and suitable

4.1.3
dormancy
state of suspended growth and metabolism of a viable seed which does not germinate when placed under normal or optimal conditions of light, temperature and moisture

4.1.4
germination
physiological activity which precedes plant growth

NOTES
1. The visible end result of this activity, the protrusion of the radical and plumule, is referred to as "sprouting".
2. The terms "germination "and "sprouting" are not synonyms.

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4.1.5
germinative capacity
ability of a grain to germinate, expressed as the percentage of grains germination under experimentally defined conditions which do not include any limitation of duration of germination

4.1.6
germinative force
ability of a grain to germinate, expressed as the percentage of grains germinating within a given time under experimentally defined conditions.

5 Terminology relating to morphology

5.1
aleurone layer
proteinaceous layer
outermost, highly differentiated, proteinaceous layer(s) of the endosperm

5.2
aleurone grains
protein bodies
granules present in the cells of the aleurone layer, composed principally of globuin-type proteins, and containing phytin and mineral constituents

5.3
awn
bristle-like extension of the glume or lemma of certain cereals

5.4
beard
brush
brush of grain
tuft of very short hairs at the non-germ end of the caryopsis of certain cereals

5.5
crease
longitudinal depression of variable depth and width, situated on the ventral side (the side opposite the embryo of the grain) of certain cereal grains

NOTE:- It is absent in the case of many cereals, but in wheat it may reach two-thirds of the thickness of the grain.

5.6
cross cells
cross-cell layer
outer of the two cellular layers which together comprise the endocarp, the longer side of which is perpendicular to the main axis of the grain

5.7
cuticle
pellicle covering the epidermis

5.8
ear
spike
panicle
general term for the inflorescence or grain-baring organ of the *Gramineae family*

5.9
endosperm
tissue containing reserve substances in cereal grains

5.10
epidermis
outermost cellular layer, generally covered by a cuticle

5.11
germ
that part of the grain which develops into a young plant

NOTE- The embryo and the scutellum are parts of the germ.

5.12
glume
bract of a spikelet

5.13
hyaline layer
refractive zone between the testa and the aleurone layer

5.14
longitudinal cells
epidermal cells having their longer sides parallel to the main axis of the grain

5.15
flowering glume
part of the plant comprising the lemma and the palëa

NOTE:- lema is the lower of the two bracts enclosing the flower of Gramineae. Palëa is the upper of the two bracts enclosing the flower of Gramineae.

5.16
scutellum
complex tissue in the shape of a shield which separates the embryo from the endosperm

5.17
seed-coat
testa
true seed-coat layer(s) of the caryopsis, fused between the pericarp and the nucellar epidermis (hyaline layer)

NOTE - The seed-coat is cuticularized and may contain a pigmneted layer.

6 Terminology relating to technology of cereals

6.1
storage and handling

6.1.1
grain drying
operation which consists of reducing the moisture content of a mass of grain by various processes (hot-air drying, ventilation, dehumidification, etc).

6.1.2
preliminary cleaning
brief cleaning before storage, during which coarse impurities and dust are removed by dry mechanical methods (sifting and ventilation)

6.1.3
aeration of grain
operation of grain
operation consisting of introducing air into a mass of grain using a flowrate which is adequate to achieve or maintain levels of temperature and humidity required for satisfactory storage

6.1.4
spontaneous heating
abnormal rise in temperature produced naturally in a grain mass as a result of bad storage conditions

6.1.5
grain silo
individual storage unit consisting of one or more bins with an installation for handling grain

6.1.6
bin
compartment of a silo, large container or an enclosed space intended for storing grain in bulk

7 Milling

7.1.1
breaking
fragmentation, principally by shearing by means of fluted rollers, during the first part of the miling process

7.1.2
bolting
sifting
sieving
separation of particles according to their size, by means of a sieve having apertures of known size

NOTE:- The term "boiling" was formerly used predominantly to describe the separation of flour from the products of grinding and, is still so used in the United Kingdom.

7.1.3
brushing
operation of mechanically cleaning a surface (of grain, grain covering or sieve) by means of a brush

7.1.4
bran brush
bran duster
bran finisher
machine for removing particles of endosperm, not detached by the breaking process, from the bran coats

7.1.5
germinal brush
grain brush
grain brush
machine used principally at the end of cleaning to remove impurities adhering to the surface of grain

7.1.6
sieve-cleaning brush
self-propelling brush underneath the sieve of a planifter and of a purifier which frees the sieve apertures of obstructing particles

7.1.7
centrifugal
reel
bolting device with a cylindrical or prismatic rotor covered with a sieving cloth of known aperture size.

7.1.8
grinding mill
device used to carry to fragmenting operation

NOTE - The grinding mills most commonly used in flour milling are roller mills, although hammer mills, pin mills, etc., are also used.

7.1.9
roller mill
machine generally comprising two pairs of rollers arranged symmetrically, used for grinding cereals and reducing them to flour and milling by-products

NOTE:- Each pair of rollers is independent, and the surfaces of the rollers can be either fluted to separate the endosperm from the brain breaking), or smooth to reduce the endosperm fragment to flour (reduction).

7.1.10
sieve
device for the purpose of sieving, consisting of a medium mounted in a frame

NOTE - For test sieves, see ISO 2395:1990, *Test sieves and test sieving - Vocabulary*.

8 Terminology relating to cereal products

8.1
bakery
place where the manufacture of baked products (including bread) is carried out and where such products may be sold

8..2
bleaching of flour
destruction of flour pigments by the addition of substances adhering and oxidizing action

8.3
flour improves
substances added to flour to make it more suitable for the manufacture of baked products

8.4
glute
viscoelastic proteinaceous material formed when flour and water are mixed into a doug, and which may be isolated by washing which eliminates the starchy dendosperm particles and cell walls as well as the soluble proteins

NOTE:- In a few countries, the term "gluten" without other qualification indicates wheat fluten. Glutens form other cereals are called maize gluten, rice gluten, etc.

8.5
weakening of gluten
softening of gluten
reduction the firmness of gluten

8.6
bulgur
food product, originally from the Middle East, resulting from a three-stage treatment of wheat (*mainly Triticum durum* Desfontaines) consisting of a pre-cooking stage followed by drying and coarse crushing and, finally, partial decoratication.

9 Terminology relating to test methods

9.1
alveograph
apparatus for measuring the viscoelastic properties of doughs made from wheat flour

9.2
alveogram
diagram obtained by means of an alveograph

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9.3
amylograph
apparatus used to determine the viscosity of a flour/water slurry when the starch is gelatinized by heating, through a predetermined cycle

9.4
amylogram
diagram obtained by means of an amylograph

9.5
extensograph
apparatus for the determination of the resistance to extension and also the extensibiltiy of doughs made from wheat flour

9.6
extensogram
diagram obtained by means of an extensograph

9.7
farinograph
apparatus for the determination of changes in water absorption and dough-mixing characteristics of wheat flours, as a function of time

9.8
frainogram
diagram obtained by means of a fairnograph

9.9
valogrigraph
apparatus for the determination of the water absorption of wheat flours and for estimation of the consistency of doughs made from them

9.10
valorigram
diagram obtained by means of a valorigraph.

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Ethiopian Standards Agency

Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010.ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1970.

ESA's objectives are:-

- Develop Ethiopian standards and establish a system that enable to check weather goods and services are in compliance with the required standards,
- Facilitate the country's technology transfer through the use of standards,
- Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/ or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes.
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